SURGICAL REPAIR IS SAFE AND EFFECTIVE AFTER UNSUCCESSFUL ANGIOPLASTY OF NATIVE COARCTATION.

LuAnn Minich, MD, Robert H. Beekman, MD, FACC, Albert P. Rocchini, MD, Edward L. Bove, MD, FACC, Kathleen P. Heidelberger, MD. C.S. Mott Children's Hospital, The University of Michigan, Ann Arbor, MI.

Balloon angioplasty (BA), followed by surgery if unsuccessful, has been utilized as an investigational treatment strategy in 41 children with a native coarctation. This approach has yielded good results without surgery in 28 (residual gradient 7±2 mmHg, mean±SEM), but is appropriate only if surgery is successful in the remaining children. To date, 11 children have undergone surgical repair after an unsuccessful BA (gradient ≥20 mmHg in 11, aneurysm in 1). In these children BA was performed at 4.3±1.2 years of age, with a balloon/isthmus ratio of 0.98±0.05, reducing the gradient from 54±3 to 27±2 mmHg ($p<0.01$). Follow-up angiography (7) or MRI (4) documented a discrete residual stenosis in 10, intimal irregularity in 1, and small saccular aneurysm in 1; collateral circulation had decreased in 3. Surgical repair 1.4±0.4 years after BA (none emergently) consisted of resection (9), patch aortoplasty (1) or subclavian flap (1). An interposition graft was required in the child with an aneurysm. Cross-clamp time was 27±2 minutes, with left heart bypass used in one child with few collaterals prior to BA. Complications consisted of one reoperation for chylothorax. There was no hemiparesis or mortality (70% CI: 0-9%). Five of 8 resected specimens had irregular intimal surfaces with small flaps of intima, not present in resected segments from 5 control children without prior BA. Follow-up evaluation 1.1±0.2 years after surgery documents a residual gradient of 2±2 mmHg, with all children normotensive. Thus, surgical repair is safe and effective after unsuccessful BA of coarctation. These data lend support to BA, followed by surgery if necessary, as an effective treatment strategy for children with a native coarctation.

COLOR FLOW DOPPLER LOW-VELOCITY ENHANCEMENT IN THE ASSESSMENT OF RESIDUAL LEAKS ACROSS PATENT DUCTUS ARTERIOSUS OCCLUSION DEVICES

Ashi Ludomirsky, MD, Martin P. O'Laughlin, MD, Charles E. Mullins, MD, FACC, Baylor College of Medicine, Department of Pediatrics, Texas Children's Hospital, Houston, TX.

Transcatheter patent ductus arteriosus (PDA) occlusion with umbrella device has become an important modality of therapy. Small residual leaks are difficult to detect and might close spontaneously. The purposes of this study were to determine if color flow Doppler (CFD) accurately detected residual leaks across PDA occlusion devices, and to evaluate the results of this procedure.

One hundred patients with isolated PDA had complete two-dimensional Doppler and CFD studies one day before and after the occlusion and at 6-month intervals after the procedure. A complete 2D-Doppler and CFD study was performed in 14 of these patients in the catheterization laboratory immediately after the device was placed in the PDA, followed by an angiogram in the descending aorta. Echocardiographic and angiographic data were compared blindly by independent observers.

	Complete Occlusion	Partial Occlusion	
		Jet	None
Cath	8	3	2
CFD	10	3	0

CFD failed to detect a tiny oozing leak through the foam in 2 patients. A repeat study in both, with enhancement of CFD low velocities by decreasing CFD Nyquist limit, accurately identified the residual oozing leaks. Of the total 100 patients, 82 had a complete occlusion immediately after the procedure documented by angiography. Using CFD, 12 of the 18 with residual leaks were found to have complete occlusion within a day, and 5 within 6 months. One needed repeat occlusion with a second device. Three residual oozing leaks were identified only with enhancement of the CFD low velocities.

Conclusions: 1.) CFD accurately detects residual leaks across PDA occlusion devices. 2.) Enhancement of CFD low velocities is essential for accurate detection of oozing leaks. 3.) Complete occlusion of PDA is achieved with transcatheter umbrella device in most of the patients.

Transcatheter occlusion of high flow Blalock-Taussig shunts with a detachable balloon.

Marc Gewillig, MD, Zaomin Wu, MD, Luc Van der Hauwaert, MD, FACC, Hilaire De Geest, MD, Wim Daenen, MD. Laboratory of Experimental Cardiology, Leuven University, Belgium.

A detachable balloon was used to occlude a modified Blalock-Taussig shunt (6mm Gore-Tex) in 8 mongrel dogs (weight 18-29kg, mean 21kg). An 8F delivery catheter was advanced via the brachial artery into the shunt over a previously positioned guide wire. A gold valve detachable balloon (fully inflated 14.7 x 7.8 mm, Ingenor, France) slided over a nozzle on a 3F catheter, was positioned in the shunt and inflated swiftly with diluted contrast medium. Despite abundant and high velocity (>4m/s) blood flow, the connection between the nozzle and the gold valve did withstand the turbulent flow in the shunt and accurate positioning of the balloon was obtained in all dogs. Deflation and repositioning was possible until release of the balloon; inadvertent release never occurred. Total occlusion of the shunt was obtained in all dogs. Frequent fluoroscopic controls up to one month revealed no migration or deflation of the balloon. Pathologic examination after 1 month in all dogs demonstrated the shunt to be sealed off by endothelium; the balloon did not protrude into the pulmonary or subclavian artery. We conclude that a gold valve detachable balloon is a safe and effective technique for total occlusion of a high flow-high velocity modified Blalock-Taussig shunt.

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Diagnostic and Therapeutic Options in the Elderly I

MITRAL ANULAR CALCIUM CORRELATED WITH NEW THROMBOEMBOLIC STROKE AND CARDIAC EVENTS AT 35-MONTH FOLLOW-UP IN ELDERLY PATIENTS.

Wilbert S. Aronow, M.D., F.A.C.C., Mordecai Koenigsberg, M.D., Itzhak Kronzon, M.D., F.A.C.C., Hal Gutstein, M.D., Hebrew Hospital for Chronic Sick, Albert Einstein College of Medicine, New York Univ. School of Medicine, New York, N.Y.

A prospective study evaluated prevalence of mitral anular calcium (MAC) and its association with atrial fibrillation (AF), new thromboembolic (TE) stroke, and new cardiac events in elderly patients. Technically adequate M-mode and 2-dimensional echocardiograms were obtained in 976 patients (714 women and 262 men), mean age 82±8 years (62-103). New cardiac events included myocardial infarction, primary ventricular fibrillation, and sudden cardiac death. Follow-up was 35±16 months (3-55). MAC was present in 402 of 714 women (56%) and in 124 of 262 men (47%), $p<0.01$. AF was present in 90 of 526 patients (17%) with MAC and in 41 of 450 patients (9%) without MAC, $p<0.001$. New TE stroke occurred in 38 of 90 patients (42%) with AF and MAC and in 12 of 41 patients (29%) with AF without MAC, p not significant. New TE stroke occurred in 91 of 526 patients (17%) with MAC and in 46 of 450 patients (10%) without MAC, $p<0.005$. New cardiac events occurred in 59 of 90 patients (66%) with AF and MAC and in 21 of 41 patients (51%) with AF without MAC, p not significant. New cardiac events occurred in 204 of 526 patients (39%) with MAC and in 123 of 450 patients (27%) without MAC, $p<0.001$. Conclusions: 1) Elderly women have a higher prevalence of MAC; 2) MAC is associated with a higher prevalence of AF; and 3) MAC is associated with a higher incidence of new TE stroke and cardiac events.